

XVI. NOTES ON THE *HYPOMELANUS* FRUIT-
BATS OF THE STRAITS OF MALACCA, WITH THE
DESCRIPTION OF A NEW RACE *PTEROPUS*
HYPOMELANUS FRETENSIS.

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During the course of a cruise in the Straits of Malacca in April, 1915, the small islands of Paya and Jarak were visited and from each examples of the *hypomelanus* species of Flying-fox were obtained. This species has been represented hitherto along the west side of the Malay Peninsula by *P. h. geminorum* from the Mergui Archipelago and by *P. h. robinsoni* from the Sembilan Islands, about 10 miles from land, off the mouth of the Perak River.

P. h. geminorum, Miller, has until now been known only from the type locality, South Twin Island, in the Mergui Archipelago, so that its occurrence on Pulau Paya, about 350 miles to the south, considerably extends its range which, when more of the small intermediate islands have been examined, will doubtless be found continuous between the two.

Pulau Paya is roughly 7 miles west of the mouth of Kedah River and about the same distance south-east of the Langkawi group. It is a wooded island about a mile in length and half in breadth standing just within the 15 fathom line of soundings. Three examples of *P. h. geminorum*, which has now to be added to the faunal list of the Malay Peninsula, were obtained upon it, a male and two females, having the following external appearance:—

Backs: blackish-brown freely sprinkled with silvery hairs, producing a markedly grizzled effect.

Heads: like backs, the palest-backed specimen (female) having the greyest head; that of the male tinged with brown.

Mantles: male; hazel, narrowly edged posteriorly with bay; females, 1, bay, and 2, blackish-bay.

Underparts; throats blackish (except in the pale-backed female where it is grey like the head), chests seal-brown, rest of the lower surface strongly grizzled aniline black.

(For measurements see table p. 248.)

P. h. robinsoni, K. And., was described from three specimens collected on Pulau Rumpia: as we have now obtained others from that island, and also two more examples from Pulau Lallang, another of the Sembilan group, it is possible to give further particulars about this race.

Males, 4 examples:—

Backs: all specimens; brownish-black, sprinkled with silvery whitish hairs.

- 10/15. Mantle; ochraceous-tawny, becoming bay at the edges.
 Head; black, rather more frosted than the back.
 Underparts: brownish-black to black, scanty grizzled with pale hair tips.
- 9/15. Mantle; russet with darker edges.
 Head; Mars-brown tinged with black.
 Underparts; cheeks and throat blackish, chest bay, abdomen from ochraceous-tawny in centre to black on sides.
- 84/15. Mantle; warm blackish-brown, chestnut posteriorly.
 Head; dark Mars-brown.
 Underparts; as 9/15 but darker throughout.
- 85/15. Mantle; ochraceous-orange washed with chestnut on nape and shoulders.
 Head and Underparts as 9/15.

Females 4 examples:—

Backs; light seal-brown sprinkled with a few whitish hairs (one individual, 8/15, is much paler than the others approaching in colour examples of *P. h. lepidus*, Miller, from the east side of the Peninsula).

248/09. Mantle, Sanford's brown, paler on posterior edge.

Three other females:—Mantles as above but much paler throughout.

Heads; pale Mars-brown, but this colour extending only to the cheeks and just beyond the eyes, crown like the posterior part of mantle or paler.

Underparts; centres of abdomen pale ochraceous-tawny, becoming seal-brown on throat and sides; no black.

An immature male resembles the females.

(For measurements see table p. 248).

While visiting Pulau Jarak seven specimens of a *hypomelanus* bat were collected. This little islet, which lies towards the middle of the Straits of Malacca about 30 miles west of the Sembilan Islands, is about 500 ft. high, in greater diameter about half a mile and is covered with forest. As is the case of Pulau Paya and the Sembilans the only other mammal met with on it was a form of *Epimys rattus*.

A series of seven bats was obtained, having the following characters:—

1 Male:—

Back; like *P. h. robinsoni*.

Mantle; burnt-sienna paling posteriorly, but becoming dark bay where it meets the back.

Head; dark Mars-brown to nape.

Underparts; Mars-brown, becoming blackish on throat and sides of body.

6 Females:—

Backs; as in females of *P. h. robinsoni*.

Mantle; bay to chestnut, much darker than *P. h. robinsoni* (one example, 83/15, however closely resembling 248/09 of that race).

Heads; resembling the male (except in 83/15, where the crown and mantle are concolorous, but differing from 248/09 in which the crown is pale).

Underparts; dark like the male or with the centre of the abdomen paler (the underpart of 83/15 however almost concolorous with the mantle).

(For measurements see table p. 248).

Amongst the above animals certain sexual differences of colour seem to be observable.

In *P. h. geminorum*, the series is too small for deductions and the male is only distinguished by a paler, brighter mantle as is usual among the Fruit-bats.

In animals from the Sembilans and Jarak the back of the males are uniformly darker, being blacker (less brown) and in the Sembilan examples the heads and mantles are also darker: an immature male alone resembling the females. In the Jarak series the mantle of the single male is, on the contrary, brighter and lighter than that of the female: so that the only constant difference between the sexes of animals from those two places is in the colour of the back.

The males from the three localities much more nearly resemble each other than do the females, in whom characters seem more stable. *P. h. geminorum*, with its grey head and back, is very unlike the others, and, since their darker head, mantle and underparts clearly distinguish Jarak females from females of *P. h. robinsoni*, I propose that the former should be known as

PTEROPUS HYPOMELANUS FRETENSIS, subsp. nov.

Characterised as follows: Back, light seal-brown, sprinkled with a few whitish hairs; mantle dark bay, head dark Mars-brown to nape; underparts bright Mars-brown, becoming blackish on throat and side.

Type. Adult female (skin and skull) F.M.S. No. 80/15. Collected on Pulau Jarak, Straits of Malacca, on April 5th, 1915.

(For measurements see table p. 248).

There are no characters in the skulls and teeth which will serve to distinguish between these races and, as may be seen from the table, measurements completely intergrade.

	<i>P. h. geminorum</i> , Pulau Paya.			<i>P. h. robinsoni</i> , Sembilan Ids.			<i>P. h. fretensis</i> , Pulau Jarak.		
	Male 24/15.	Female 23/15.	Female 22/15.	Male 9/15.	Female 8/15.	Female 7/15.	Male 77/15.	Female 79/15.	Female 80/15.
Skull, total length to gnathion ...	65.6	64	62.6	65.7	64.7	63.1	67.8	63.3	62.5
" palation to incisive foramina ...	33.8	32.2	30.8	32.4	32	31.2	33	32.1	31.3
" front of orbit to tip of nasals ...	22.6	22.1	20.3	20.8	21.8	20.6	22.7	20.3	20.2
" width of brain case at zygomata ...	23	22.4	2	23.6	22.5	21.5	23	20.5	22.6
" zygomatic width ...	36	33	32.2	38.3	34.4	31.6	37.2	31.7	34
" width across m ¹ externally ...	16.8	16.8	17.1	18.4	17.6	17.2	17.4	17	17.9
" lachrymal width ...	14	13	13	14	13.7	13.1	14.5	13.4	13.9
" width across canines externally ...	12.2	11.1	11.1	12.8	11.7	10.7	12.2	11.7	11.9
" postorbital constriction ...	7	6.9	7.3	7.6	7.1	6.5	7.2	7.2	7
" interorbital constriction ...	9.6	8.8	8	9.7	9	8.2	9.3	8.1	8.5
" width of mesopterygoid fossa ...	7.2	7.5	7.6	8.4	7.2	7.2	7.7	7.3	7.9
" width between p ⁴ -p ⁴ internally ...	10.6	10.1	10	11.2	10.5	10.2	11.2	10	10.8
" between cingula of canines ...	7.2	6.4	6.7	7.9	7	6.7	7.9	6.9	7.8
" orbital diameter ...	12.4	13.1	12.6	13.6	13	12.5	13.1	12.6	12.9
Mandible, length ...	52.3	50	48.8	51.8	49.2	49.2	53.3	49.2	49.3
" coronoid height ...	25	23.8	23	25	24	23.3	26	24	23.3
Upper teeth, c-m ² ...	25.8	24	23	24.9	24.6	23	24.8	23	22.3
Lower teeth, c-m ³ ...	29.5	27.3	27	28.3	27.7	26.5	29	26.2	25.6
Head and Body* ...	236	222	221	229	214	225	220	205	199
Forearm* ...	127	...	130	138	130	127	138	...	130
Ear* ...	22	23	24	25	24	24	...	28	25

* Native collectors' measurements.